

# U.S. Army Computer Network Operations- Electronic Warfare (EW) Proponent

## An Overview

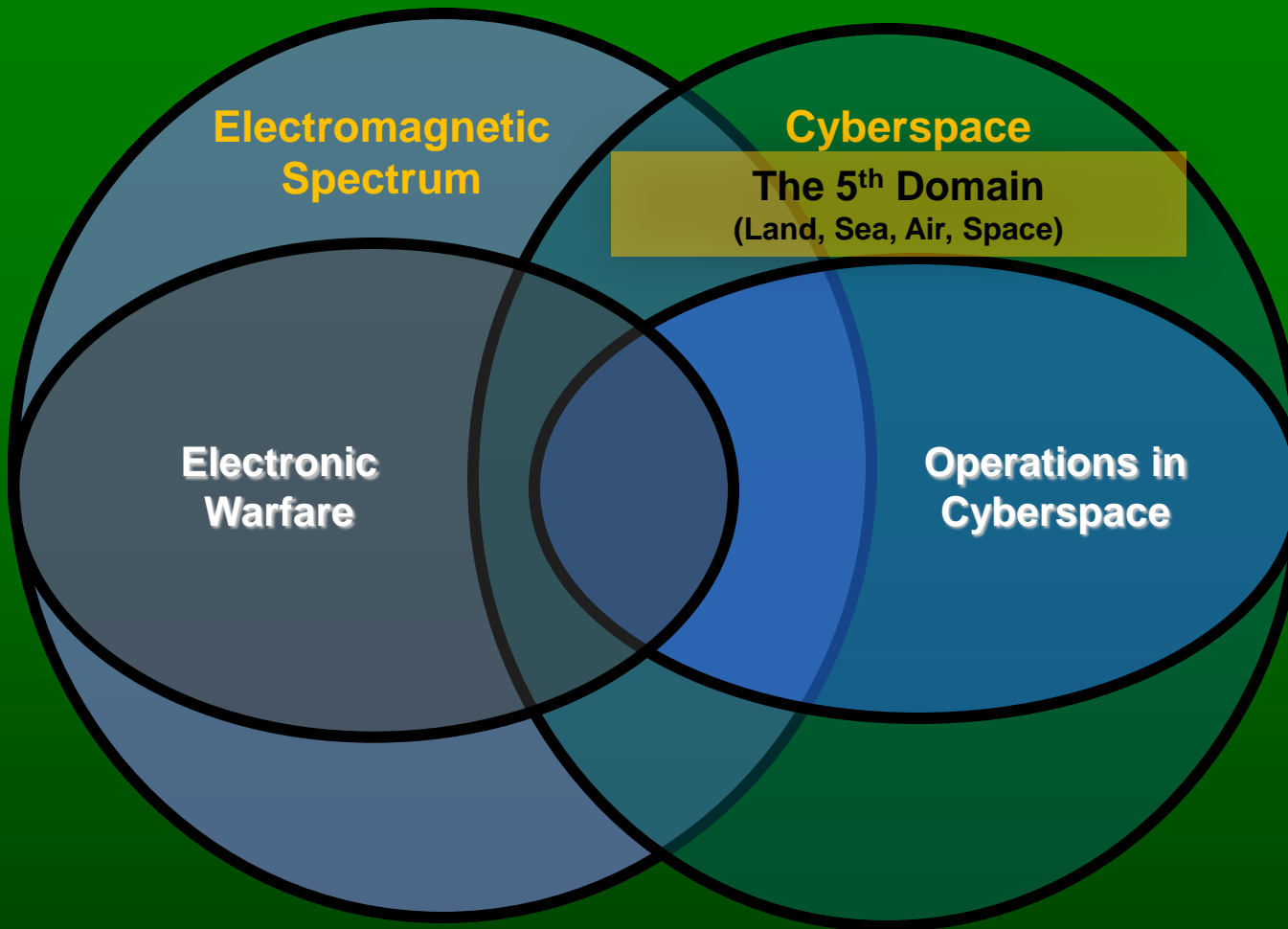


# Defining Cyberspace and Operations in Cyberspace

- **12 May 2008 Deputy Secretary of Defense definition of Cyberspace:** "cyberspace: a global domain within the information environment consisting of the interdependent network of information technology infrastructures, including the Internet, telecommunications networks, computer systems, and embedded processors and controllers."
- **Combined Arms Center Proposed Definition of "Operations in Cyberspace":** Wired and wireless computer and telecommunication network-based operations designed to attack, defend, exploit and maintain cyberspace and the data within it across full-spectrum operations. Military operations including computer network operations (CNO), network operations (NetOps), network warfare (NetWar), and computer and telecommunication network aspects of space superiority and electronic warfare (EW) designed to create primary effects in and through cyberspace are considered operations in cyberspace. Other military operations (such as PSYOP, Physical Attack, and other aspects of Space Superiority and **Electronic Warfare**) may create effects within or through cyberspace and support operations in cyberspace, but are not operations in cyberspace per se merely due to their use of the domain.



# Cyber-Electronic Domain



As a land force, the Army operates in and amongst populations that are increasingly connected by computers, networks, telecommunications systems and electronic devices. Adversaries are leveraging both the electromagnetic spectrum and cyberspace in inventive and sophisticated ways to advance their causes. In order to contain adversarial advances and accomplish its mission across the full spectrum of operations, the Army must be adaptive and aggressive in defining concepts and capabilities needed to successfully operate within cyberspace and the electromagnetic spectrum.



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# Defining Electronic Warfare

**Electronic warfare (EW)** is the use of the electromagnetic spectrum to effectively deny the use of this medium by an adversary, while optimizing its use by friendly forces. Electronic warfare has three main components: electronic attack, electronic protection, and electronic support.

**Electronic attack (EA)** is the active or passive use of the electromagnetic spectrum to deny its use by an adversary. *Active EA* includes such activities as jamming, deception, active cancellation, and use of electromagnetic pulse. *Passive EA* includes such activities as the use of chaff, balloons, radar reflectors, Faraday cages, winged decoys, and stealth.

**Electronic protection (EP)** includes all activities related to making enemy EA activities less successful by means of protecting friendly personnel, facilities, equipment or objectives. EP can also be implemented to prevent friendly forces from being affected by their own EA. *Active EP* includes such activities as technical modifications to radio equipment (such as frequency-hopping spread spectrum). *Passive EP* includes such activities as the education of operators (enforcing strict discipline) and modified battlefield tactics or operations.

**Electronic support (ES)** is the passive use of the electromagnetic spectrum to gain intelligence about other parties on the battlefield in order to find, identify, locate and intercept potential threats or targets. This intelligence, known as ELINT, might be used directly by fire-control systems for artillery or air strike orders, for mobilization of friendly forces to a specific location or objective on the battlefield, or as the basis of electronic attack or electronic protection actions.





# Defining Computer Network Operations

CNO is considered one of five core capabilities under Information Operations (IO) information warfare. The other capabilities include Psychological Operations (PSYOP), Military Deception (MILDEC), Operations Security (OPSEC) and Electronic Warfare (EW).

Computer Network Operations, in concert with EW, is used primarily to disrupt, disable, degrade or deceive an enemy's command and control, thereby crippling the enemy's ability to make effective and timely decisions, while simultaneously protecting and preserving friendly command and control.

**Types of Military CNO:** According to Joint Pub 3-13, CNO consists of computer network attack (CNA), computer network defense (CND) and computer network exploitation (CNE).

*Computer Network Attack (CNA):* Includes actions taken via computer networks to disrupt, deny, degrade, or destroy the information within computers and computer networks and/or the computers/networks themselves.

*Computer Network Defense (CND):* Includes actions taken via computer networks to protect, monitor, analyze, detect and respond to network attacks, intrusions, disruptions or other unauthorized actions that would compromise or cripple defense information systems and networks.

*Computer Network Exploitation (CNE):* Includes enabling actions and intelligence collection via computer networks that exploit data gathered from target or enemy information systems or networks.



# Army Proponency

## U.S. Army Computer Network Operations and Electronic Warfare Proponents (USACEWP)

**Mission:** Develop, synchronize, integrate, and coordinate the Army Culture and the CNO-EW Capabilities and Capacity across the DOTMLPF domains IOT prepare the Army and the Land Component for future challenges in Cyberspace.

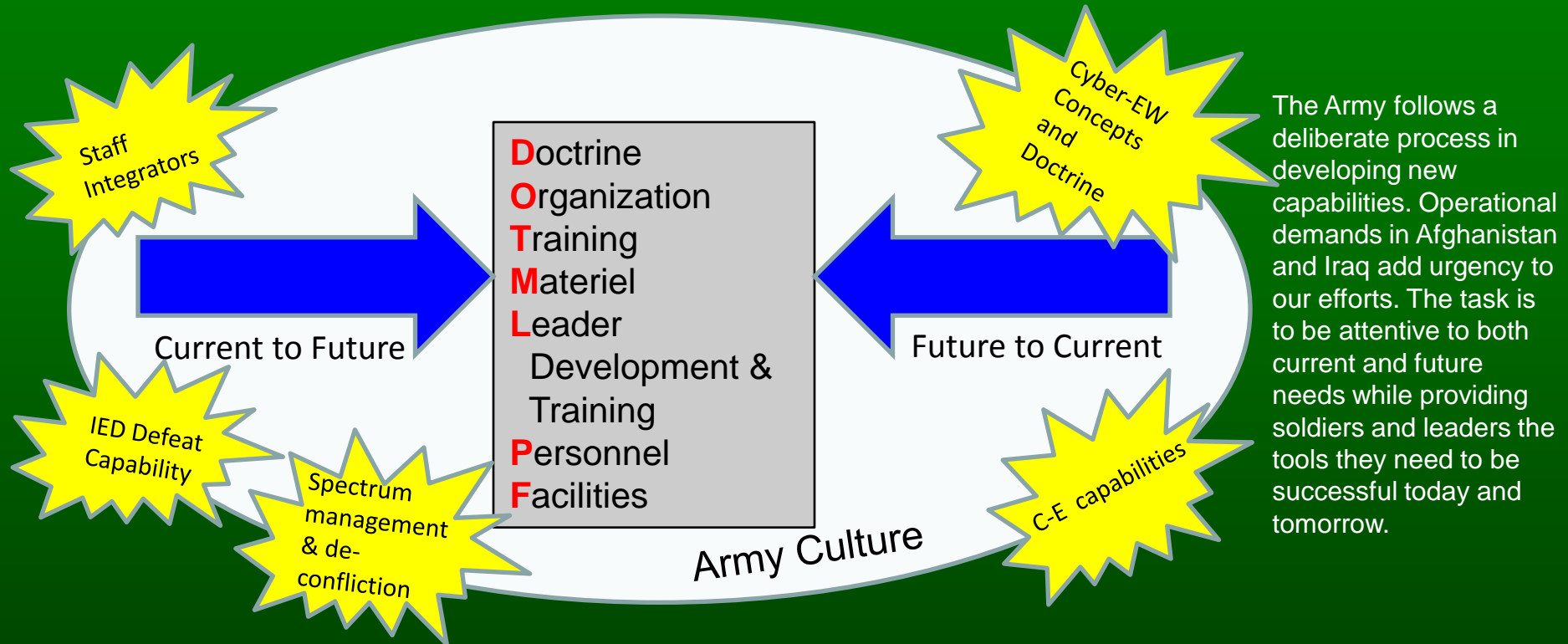
**Vision:** Cyberspace and the broader electromagnetic spectrum (EMS) are optimized by soldiers and leaders who understand both the operational and technical dimensions of this segment of the operational environment and are outfitted with cyber and electronic capabilities enabling a broad range of joint, interagency, intergovernmental, and multinational activities during full spectrum operations while concurrently reducing risk to the force.

- Decision authority to synchronize, integrate, and coordinate CNO and EW with modularity and future requirements
- Develop CNO and EW doctrine, organization, training, materiel, leadership and education, personnel, and facilities (DOTMLPF) requirements
- Determine the scope of future CNO and EW capabilities development efforts
- Determine integration tasks for Army, Joint, Interagency, Intergovernmental, and Multinational computer network and electronic warfare operations
- Perform as the Army's centralized manager and integrator for CNO and EW combat development and force management activities



# USACEWP Mission

Develop, synchronize, integrate, and coordinate the Army Culture and the CNO-EW Capabilities and Capacity across the DOTMLPF domains in order to prepare the Army and the Land Component for future challenges in Cyberspace

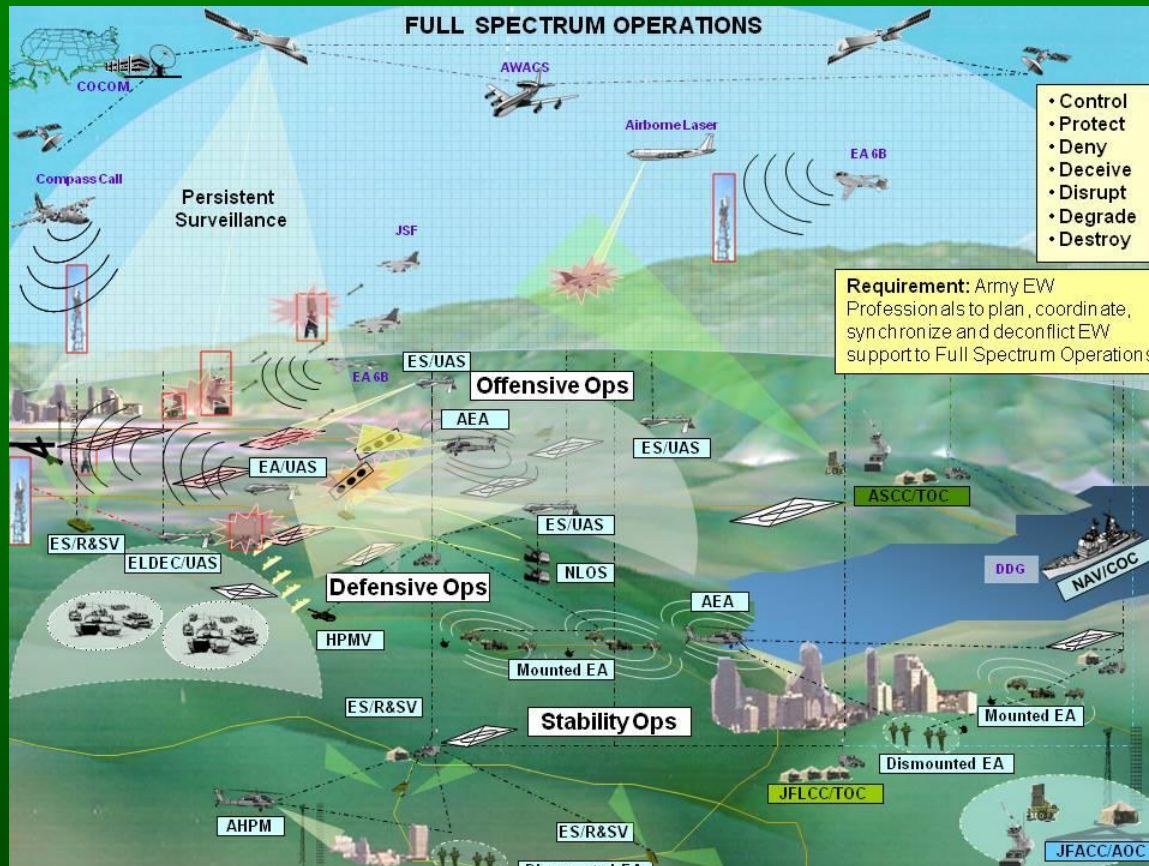


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# Cyber-Electronic Vision



Cyberspace and the broader electromagnetic spectrum (EMS) are optimized by soldiers and leaders who understand both the operational and technical dimensions of this segment of the operational environment and are outfitted with cyber and electronic capabilities enabling a broad range of joint, interagency, intergovernmental, and multinational activities during full spectrum operations while concurrently reducing risk to the force.

U.S. and its allies must be able to defend and operate freely in cyberspace

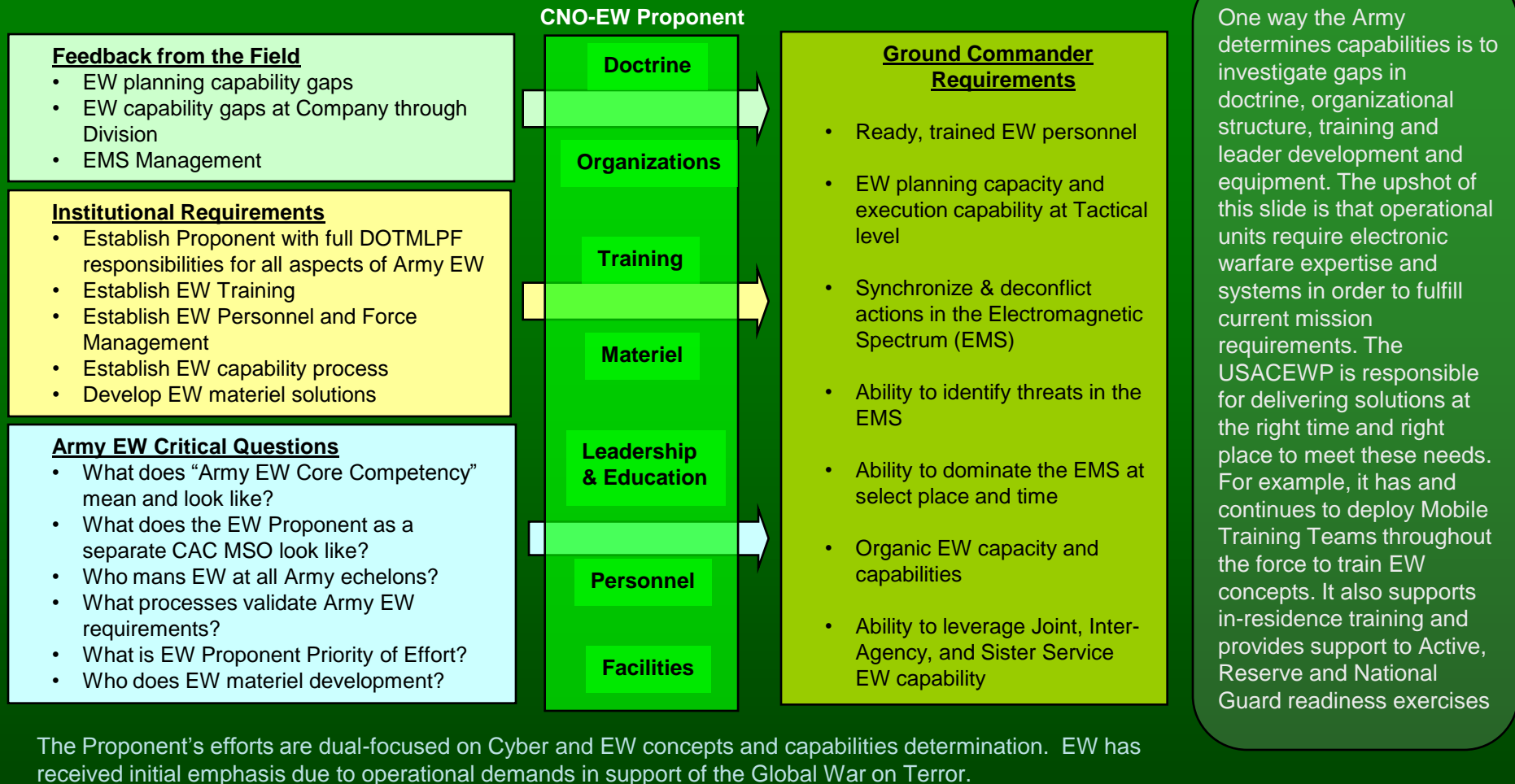


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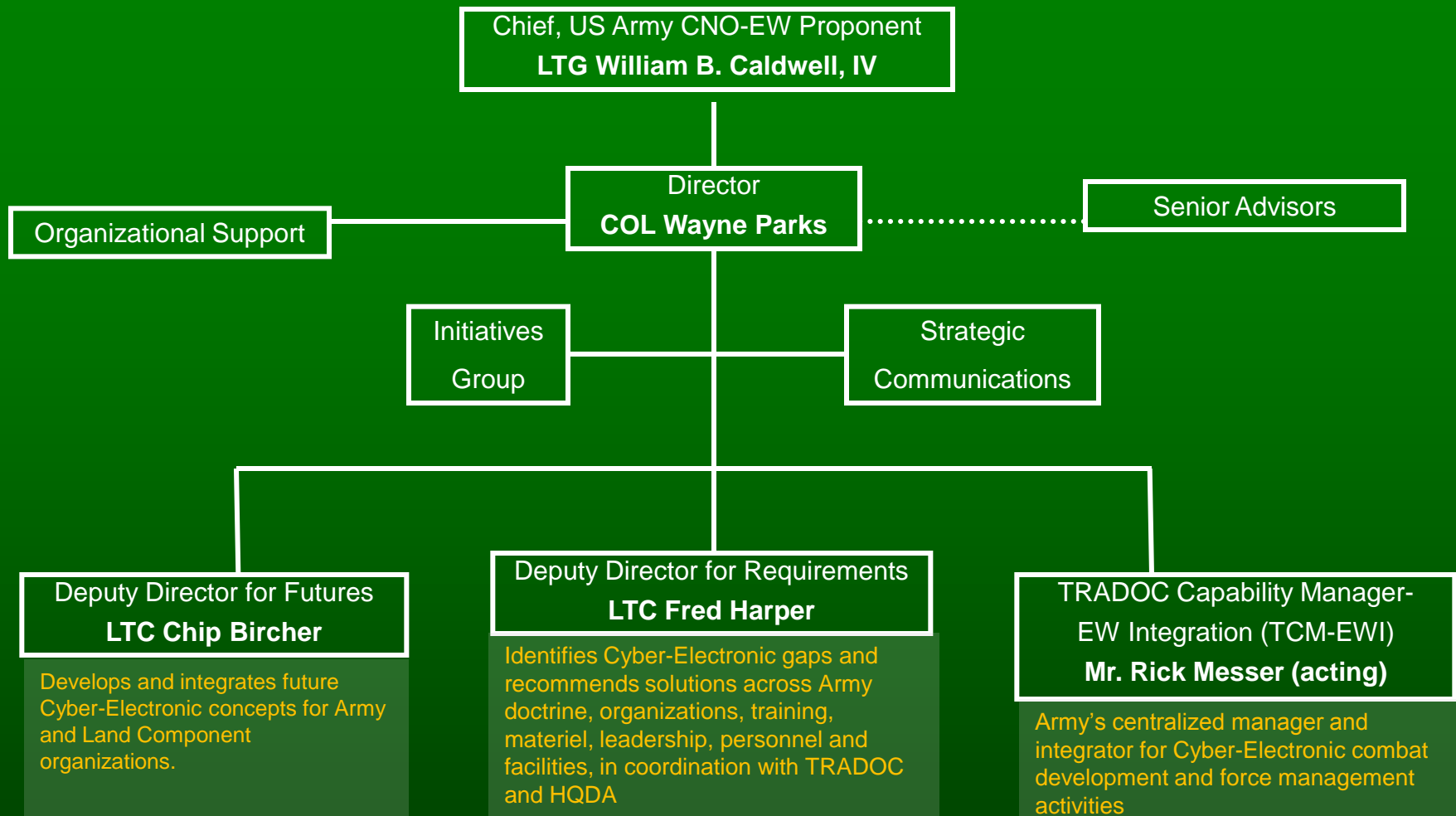
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# Meeting Operational Requirements



# Organizational Structure



# EW – Where We Are

## Doctrine, Concepts, and Organizational Design

- EW Capability Based Assessment underway
- Field Manual (FM) 3-36, Electronic Warfare, on-track for September 2008 release
- Conceptual development of new FM on Cyberspace
- Phased implementation of EW force development plan that will establish dedicated EW personnel throughout the force; implementing additional skill identifier (ASI) as interim solution

## Leader Development & Education and Training

- Tactical and Operational EW Courses in full production: over 1000 Joint graduates to date
- Mobile Training Teams deploying to provide unit-specific EW training for all deploying units
- EW Officer Functional Area Qualification Course (Pilot) ready to execute
- LDE&T Plan underway to evolve from CNO-EW to Cyberspace

## Personnel

- Military Occupational Classification and Structure plan under development for Enlisted MOS, Warrant Officer Career Field and Officer Functional Area
- Active management of Army trained personnel to begin replacing Navy EW personnel in theater

Simply put, we're working hard to give soldiers and leaders what they need.

## Materiel, Facilities & Resources

- Continuing to work resourcing constraints
- Fiscal Year 2008 funding received; out-year funding is being integrated into budget submissions to Congress



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# Electronic Warfare Way Ahead

Complex problems ultimately require profoundly simple solutions that provide soldiers and leaders the ability to operate within cyberspace and the electromagnetic spectrum with confidence and effectiveness. Success in the cyber-electronic realm must be accomplished throughout the full spectrum of operations and against increasingly sophisticated threats.

## ARMY EW VISION

### The Army's Future Force Capstone Concept's: 7 Key Operational Ideas

Shaping and Entry Operations

Operational Maneuver from Strategic Distances

Network-Enabled Battle Command

Decisive Maneuver

Concurrent and Subsequent Stability Operations

Distributed Support and Sustainment

- Direct Attack of Enemy Decisive Points and Centers of Gravity
- Continuous Operations and Controlled Operational Tempo
- Close Combat

Intra-theater Operational Maneuver

Supported by EW/C2W Capabilities: (EA, ES, EP)

Airborne  
- Heliborne  
- UAS  
Vehicle Mounted  
Man Portable  
Ground based:  
- Manned  
- Unmanned

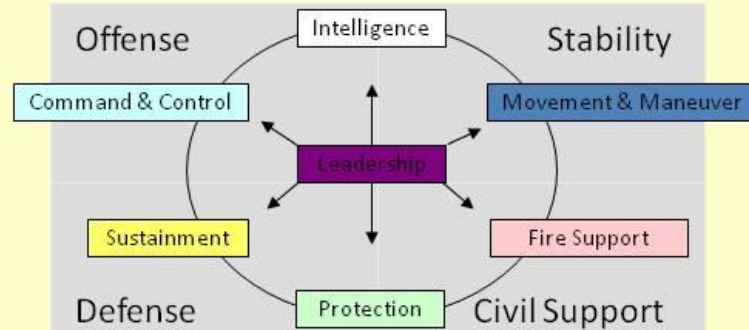
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Command & Control Warfare  
Airborne  
- Fixed Wing  
- Heliborne  
- UAV  
Ship based  
Space Based

To Achieve Desire EW/C2W Effects

Control, Protect,  
Deny, Deceive, Disrupt,  
Degrade, and/or  
Destroy

Applied across the Warfighting Functions within the  
Context of Full Spectrum Operations



Against the Broadening EW Target Set



Traditional  
Irregular  
Catastrophic  
Disruptive

Stable Peace

Spectrum of Conflict

General War

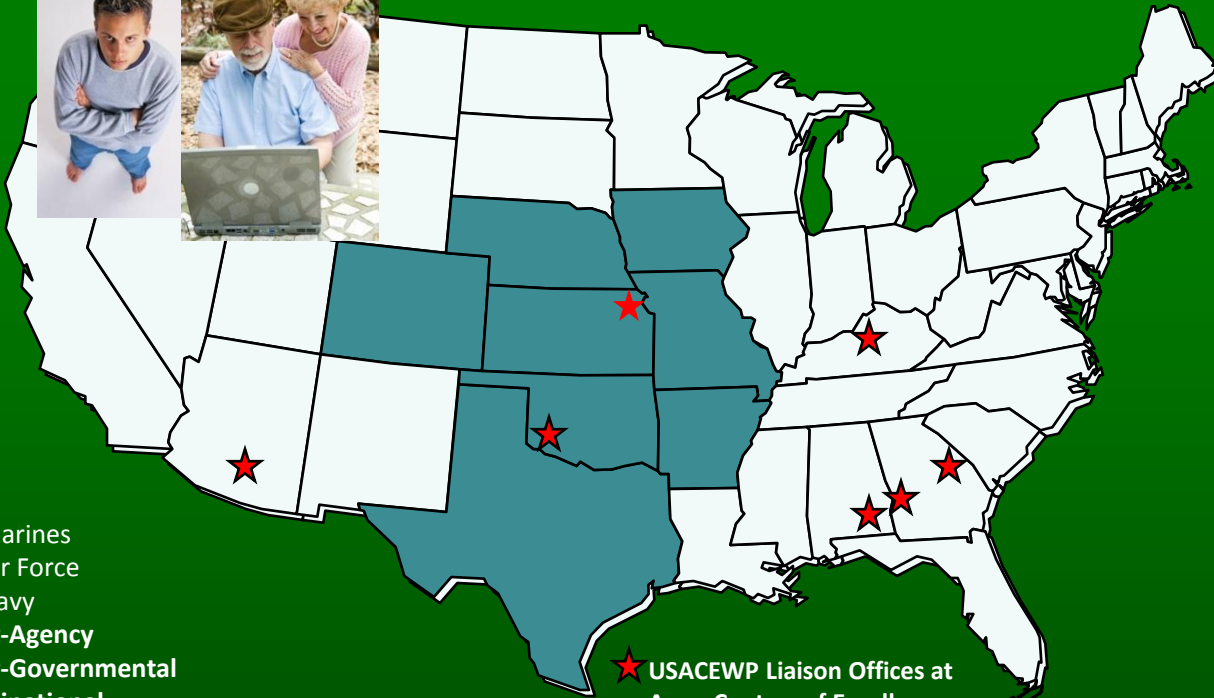


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# USACEWP Partners & Constituencies

All citizens committed to protecting the frontiers of freedom



## Joint

- Marines
- Air Force
- Navy

## Inter-Agency

Inter-Governmental  
Multinational

Great Plains Cyber-  
Electronic Academic Consortium  
(proposed)

## USACEWP Liaison Offices at Army Centers of Excellence

Fort Gordon  
Fort Benning  
Fort Rucker  
Fort Knox  
Fort Sill  
Fort Huachuca

American Public

Centers of  
Influence

Decision  
Makers

Warfighters



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